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ATM and Cashpoint Art: What's at Stake in Designing Against Crime?

When Hammersmith Police approached the Design Against Crime Research Centre (DACRC) at the University of Arts London, for help in dealing with theft and fraud linked to users of ATM's, the DACRC team looked sideways, beyond traditional 'security solutions', collaborating with artist Steve Russell, to help find some new and creative ways of influencing behaviour around "cashpoints". Hammersmith Police contacted DACRC because Prof. Lorraine Gamman, who directs the Centre, has written about design against pickpocketing and bag theft, and works closely with businesses in her role as advisor to the Home Office's "Design Technology Alliance Against Crime".



Image: Russell 2010. Project conceptualised by Design Against Crime Research Centre/Hammersmith Police/Steve Russell 2010.

Cashpoint Crime?

There is great difficulty in placing a numerical figure on how much pick pocketing from cash points costs the UK . Figures released by the British Transport Police (BTP) show that for 2009/10, whilst the majority of crime types had decreased, the theft of passenger property (or) pick pocketing on the Underground, has seen an increase of 10.8%: there has been an increase also on the Overground, with a 16% increase of

theft of personal property or pick pocketing. The estimated rate of personal property theft in 2004 in London (U.K.) was 102 (pocket picking = 52) crimes per 1,000 population at risk. These rates are higher than those for other types of acquisitive crime covered in the survey.

To evaluate cashpoint theft we need to not work out what percentage of above crimes occurred around cashpoints, but also to understand how much money was actually stolen, whether the victim of crime had to take time off work i.e. to cancel and reinstating the card/s, the possible time taken for any injury sustained, the time and possible finance incurred by the Banks or Building Society involved, the time spent reporting this crime to the Police combined with the Police time and finance into investigating this crime. It must also be noted, that the theft of personal property may initially be to gain cash, however it may also provide an opportunity for identity theft, with the victims details being kept and criminalized, a crime which is significantly increasing .

Cashpoints or ATMs have been in use on the streets of the world for over forty years. Their design has evolved to ensure that they work safely, to the convenience and benefit of users. A considerable amount of the design focus has been on developing original encryption software to ensure transactions can be verified and avoid abuse. This has led to anti fraud functionality, whilst also ensuring the design of machines are invulnerable to physical attack from criminals, whilst being protected and surveyed. Consequently, cashpoints and ATMs have evolved and also been designed to anticipate human error. For example, we take our cards out of the machine, before we are allowed to collect the money, as the result of user centred design observations showed that once in possession of our cash, the absent minded amongst us often did not remember to collect our cards. Consequently the design of the system was adjusted to avoid this scenario and 'futureproof' cash points against such likely human error.

Despite such user centric concern there has been little design address, even when creating up-to-the-minute biometric cash point dispensers of today , to the consideration of how the "context of use" affects user experience and crime. Whilst there has been some research that reviews the environment the machine is located in, from the point of view of hostile vehicle mitigation- preventing crimes like ram raiding, there has not been significant address as to how best design against fraud and to block modest plastic devices known as Lebanese loops that helps thieves steal our money or identities. Nor has design been invoked to help prevent forced withdrawals from machines that have become a worrying trend, or even lesser crimes of anti social behaviour or pickpocketing around them. For example, "dips" (pick pockets) are commonly found at sites of cash

withdrawals, where they steal whatever they can get: money, pin numbers and cards. Such incidents around cashpoints are frequently reported to the police and prove to be of considerable inconveniences to the public, particularly in crowded areas or on busy pavements, when users may easily be distracted for a moment by an offender, (often working in teams using a distraction technique) as they have demonstrated that they have cash on their person, indicating exactly where it has been stored, or they find themselves being overlooked by thieves. 'Shoulder surfing' is a term used to describe how individuals memorise individuals' pin numbers, which then, once the theft of the wallet has occurred, allows further theft from the bank account to occur using the card in question.

Design for Public Space

For design to respond to such behavioural vulnerabilities, there are calls for more understanding, of what Thaler and Sunstein (2008) call "choice architecture". That is design which recognises that everything matters, and so design nudges relate to "any aspect of the choice architecture that alters peoples' behaviour in predictable ways without forbidding any option or significantly changing their economic incentive. To count as a mere nudge, the intervention must be easy and cheap to avoid. Nudges are not mandates..." Clearly where a design is located, is as important as the design of the object (i.e. cashpoint machine) itself. Here we take the idea of choice architecture to mean that ATM or cashpoint, manufacturers may need to give nudges to clients about how they should install the machines, and provide recommendations that nudge them to install machines in locations whose spatial layout helps thwart thieves.

"Context is everything", in terms of design usage in public space. Thaler and Sustein argue that astute design choices can "nudge" us into making the right choices or wrong decisions, and ultimately design can help us act for crime prevention purposes and to our own better advantage. The problem is that police-led initiatives have perhaps not yet developed sophisticated enough understanding of how subtle such design nudges need to be deliver effective crime prevention. Yellow traffic-style warning lines around cash points to guide pedestrians to keep back, so the privacy of the user is not compromised, work, but are hardly easy on the eye. They may create boundaries that help reduce the opportunity for the potential abuser, who wants to spy on the cashpoint user as a "mark" (potential crime victim), to commit crime, but their aesthetic and symbolic denouement is harsh. The public are addressed by the yellow lines as if they are road traffic rather than human beings using the pavement.

The above example, at a popular UK high-street bank and , literally paints out what Oscar Newman calls "defensible space" on the pavement around cash points. These yellow drawn on as "boxes", or other forms of pavement marking, more common to road signage also (see in Fig 3 below), are known to have had some level of success in demarking territory, and affecting proxemics. They operate to deliver greater distance between customers using cash points and/or pedestrians on the street nearby, or in the queues around them, even if they are not exactly pleasing to the eye.



Image: Willcocks/DACRC 2005.

This kind of solution has been implemented in many towns and cities in the UK over recent years, on police advice. However, this specific approach taken does have some problems. The instructive direction of the yellow or white lines is over-stated for many pedestrian environments. Also at a functional level, the distance marked out for pedestrians to stand back from cash point users can vary between installations i.e. there is no standard size that can always be utilised so at times the yellow or white lines are not painted to indicate a distance sufficient enough to reduce opportunities for thieves of shoulder surfers (pin-number spies).



Image: Chris Phan/ functoruser (Flickr)

Why Cashpoint “Art”?

Steve Russell, whose artwork is shown earlier and below, has delivered a more artistic interpretation of Safety Zones around cashpoints in Hammersmith Broadway.

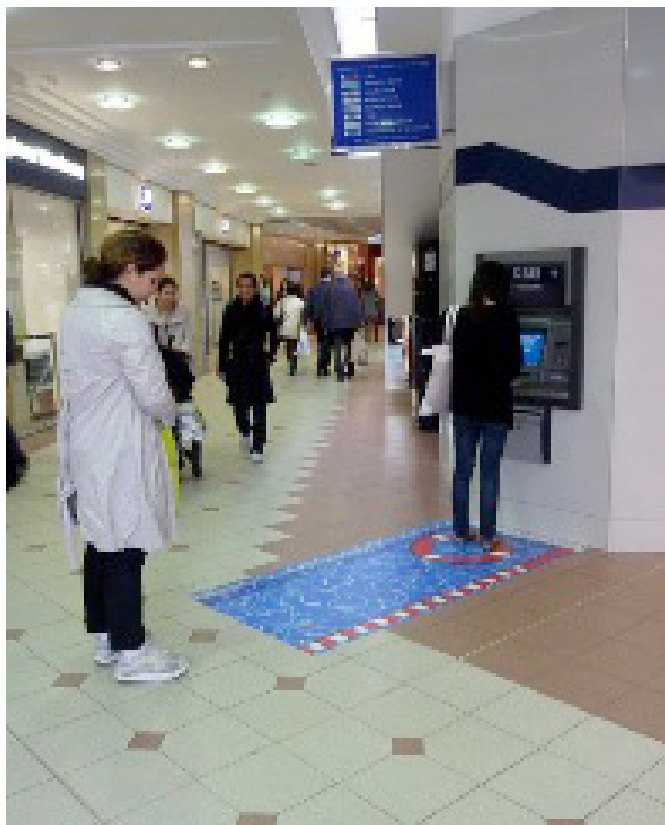
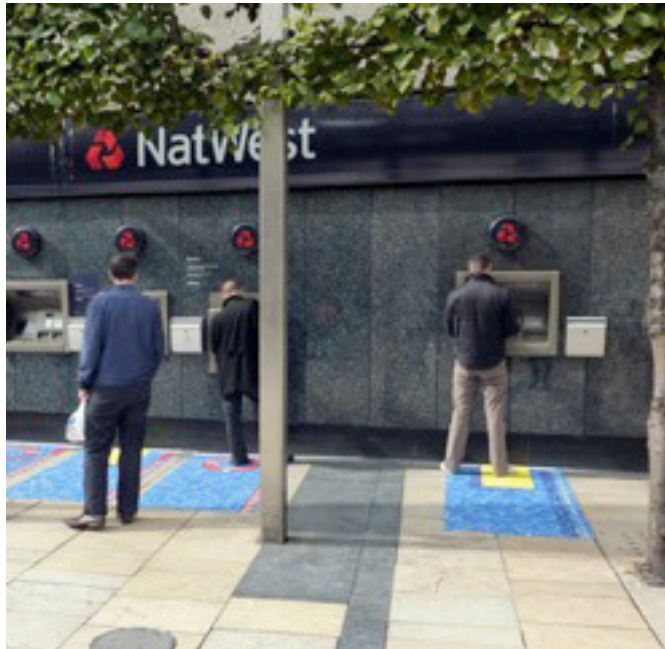
Hammersmith Police in London were brave enough to try and make this strategy work as a design nudge, in the spirit of helping the public, and with an eye on adopting a more

(eg according to Westminster's legal team). Worse there seems to be little interest from the high street banks in the strategy in the first place. This may be because banks, and other businesses, do not want to be associated with “crime”. Even though dipping happens, often around cashpoints or in crowded places, some businesses tends to view police warnings as “bad for business”, sending the wrong message to customers about the safety of the premises or the geographic location of the business, by association. No wonder. The signs on the street, such as those examples featured below, are images of police warnings about pickpockets. They have not been designed or delivered sensitively - or via what Gamman and Thorpe (2008) have described as a “stealth” approach where “the invisible hand of the designer” gently nudges or directs. In fact, because such police signs are often heavy-handed in terms of their emphasis, they may provoke fear of crime, rather than to communicate to passers by they need to take precautions (not just be afraid). In context of precedents as these, it is perhaps little surprise that banks who may be keen to protect customers, have not become proactively involved, even if they are ultimately responsible for the majority of cash points on the high street.

As Paul Truman, a police officer from Hammersmith observed:

“I was aware that raising awareness amongst the public could sometimes be seen in a negative way within the local business community, almost like attaching crime to the locality. What we wanted to achieve were designs, which would be seen as positive, innovative and create a talking point. We selected one theme for the trial, but Steve and I also developed other designs, all of which could incorporate Bank logos into the designs. We felt this would strengthen the possibility that Banks would take the initiative forward and run them outside branches where distraction thefts have been highlighted as a problem”.

The cash point artworks by Steve Russell were commissioned and funded by Hammersmith Business Improvement district, and art directed in consultation with DACRC and the police. They were reproduced on vinyl and literally stuck to the floor to create safety zones that can engage and possibly amuse or delight the public, while simultaneously effecting increased space for the cash point user. The artist Steve Russell observes: “My paintings were created as a gentle and enjoyable reminder to ATM users to be aware of each other's space when using, and waiting to use the machines. The use of art is a positive



pleasing aesthetic approach. It is not easy to get permission from local authorities in London to make such interventions in public spaces because marks on the floor, whether artistic or otherwise, are construed as “graffiti” by some local authorities



Image: Mr Hyde (Flickr)



Image: Matt⁵ (Flickr)

move away from the strictures of yellow warnings lines and ‘you must not do this’ graphics.”

The water and pool scenes created by Russell around cashpoints in Hammersmith provide a very clear nudge. The way this cashpoint artwork has been designed into the landscape, also adds strong aesthetic value to the wider environment. As the photographs below reveal, the artworks offer increased “defensible space” zones (as earlier police examples do too) to cash point users and other pedestrians in the Hammersmith area, who have interpreted them and adjusted very quickly and respectfully to such prompts in daily usage. Critics of this approach, however, such as Martin Perks have suggested such design nudges, or designs against crime, may abuse our civil rights via manipulation and are “paternalistic” in their approach. In reply to such criticisms the designer, Adam Thorpe, has argued, designs that help people avoid being victimised and “robbed” by thieves, should more appropriately be understood as “fraternalistic” and helpful rather than manipulative, in a negative way, towards the public. Such designs are clearly user friendly if the adults and children seen in the images here, are anything to go by, and as Thorpe points out, design against crime in this instance, is often effective because objects like bike stands or safety zones around cash points have been created based not on a police brief, but on design responses linked to real and collective user experience.



Images: Russell 2010

Conclusion

This case study of the cash point, and the cash point art we have reviewed here, raises questions about how the physical and cultural “context of use” may be as influential as design itself. Serious investment into the security of cashpoint machines has already occurred, but to some extent the issues with ‘context of use and abuse’ that are connected to them, have been rather neglected by manufacturers, who would be well advised to invest in more guidance to banks and their customers who install cashpoints, and help nudge them to safety.

We highlight that brave multi-agency partnerships are necessary to effectively achieve crime prevention. To resolve some instances of dipping around cashpoints, engagement by the banks, the local council, the police, the victims and those responsible for security at the location in question, needs to be established to prevent thieves from not only stealing our cash (be it through robbery or dipping) but then going on committing identity theft (and credit card fraud). This escalation in severity highlights why pick pocketing from ATM's, must be tackled at the ground level, without causing hysteria or media moral panics, and thus finding new ways to ensure thieves are unable to execute their crimes.

Lorraine Gamman and Marcus Willcocks



Images: Russell 2010

End Notes

¹ ATMs first came into use in December 1972 in the UK; the IBM 2984 was designed at the request of Lloyds Bank. The 2984 CIT (Cash Issuing Terminal) was the first true Cashpoint, similar in function to today's machines; Cashpoint is still a registered trademark of Lloyds TSB in the UK. The first document use of a Cashpoint however, appears to have Tokyo in 1968 – see 'Instant Cash via Credit Cards', ABA Banking Journal, p. 99, January 1967

² See www.inthebag.org.uk and Johnson, S., Bowers, J., Gamman, L., Mamerow, L. and Warne, L. (2010) 'Theft of Customers' Personal Property in Cafés and Bars'. Guide No. 60. Centre for Problem-Oriented Policing. http://www.popcenter.org/problems/cafe_bar_theft/

³ <http://www.designcouncil.org.uk/our-work/challenges/security/design-out-crime/the-alliance/>

⁴ According to NCVS results, victims of pocket picking lose about \$32 million per year.

⁵ Transport for London (2010) 'Crime falls again on the Tube as investment in security continues' Accessed on 20.10.10 Available at: <http://www.tfl.gov.uk/corporate/media/newscentre/archive/15597.aspx>

⁶ Van Dijk, J., J. van Kesteren, and P. Smit (2007). Criminal Victimization in International Perspective: Key Findings from the 2004-2005 ICVS and EU ICS. The Hague, South Holland, N.L.: Boom Juridische uitgevers.

⁷ Newman, G. (2003). 'Check and Card Fraud' Problem Specific Guide No 21. Available at http://www.popcenter.org/problems/credit_card_fraud/ [Accessed 19.10.10].

⁸ Newman, G. (2004). 'Identity Theft' Problem Specific Guide No 25. Available at http://www.popcenter.org/problems/identity_theft/ [Accessed 19.10.10].

⁹ Thaler R and Sustein C (2008). Nudge: Improving Decisions about Health, Wealth and Happiness, London, Penguin Books.

¹⁰ Polish design first biometric cashpoint dispenser – March 2010 – see: <http://www.independent.co.uk/life-style/house-and-home/polish-bank-claims-europes-first-biometric-cash-point-1971507.html>

¹¹ "The purpose of this paper is to assess the impact of Strike Force Piccadilly, a New South Wales Police initiative to address an upsurge in ram raids targeting automatic teller machines (ATMs). Also, the aim is to understand the apparent success of the project in terms of a public-private partnership, involving primarily police and the retail and banking sectors."

Prenzler, T. (2009) "Strike Force Piccadilly: a public-private partnership to stop ATM ram raids", Policing: An International Journal of Police Strategies & Management, Vol. 32 Iss: 2, pp.209 - 225

¹² In their simplest form, Lebanese loops consist of a strip or sleeve of metal or plastic (even something as simple as a strip of video cassette tape) that is inserted into the ATM's card slot. When the victim inserts their ATM card, the loop is sufficiently long enough for the card to be fully drawn into the machine and read. The victim then enters their PIN as normal, and requests the funds. The ATM then tries to eject the card, but a "lip" folded at the end of the loop prevents the card from being ejected. The machine senses that the card has not been ejected, and draws the card back into the machine. The cash drawer does not open, and the money that has been counted is retained by the machine. In most cases, the victim's account is not debited. The victim believes the machine has malfunctioned or genuinely retained their card. Source: http://en.wikipedia.org/wiki/Automated_teller_machine#cite_note-53

¹³ At least as far back as July 30, 1986, critics of the industry have called for the adoption of an emergency PIN system for ATMs, where the user might be able to send a silent alarm in response to a threat – if they were being held at knife or gun point.

¹⁴ The Crime and Disorder Act (1998) definition of anti-social behaviour (ASB) defines ASB as follows:

'Acting in a manner that caused or was likely to cause harassment, alarm or distress to one or more persons not of the same household as (the defendant).' Individuals, withdrawing money from the ATM, are likely to feel in a position of vulnerability and therefore may feel threatened if individuals surround them acting in a way that causes alarm or distress

¹⁵ Prenzler, T. (2009) "Strike Force Piccadilly: a public-private partnership to stop ATM ram raids", Policing: An International Journal of Police Strategies & Management, Vol. 32 Iss: 2, pp.209 - 225

¹⁶ Nudge p. no

¹⁷ Newman, O. (1972). *Defensible Space: Crime Prevention through Urban Design*. New York: Macmillan.

¹⁸ The term proxemics was coined by the anthropologist Edward T. Hall in 1966. It refers to the study of the spatial requirements of humans and animals and the effects of population density on behaviour, communication, and social interaction. Hall notes that different cultures maintain different accounts and standards of personal space. Hall's work shows that there are cultural differences to about how different people experience and use space – Latin people find it easier to stand close to each other than Nordic types. He notes culture, gender, social situation and status as well as individual preferences affect such phenomena too. See E.T.Hall, *A System for the Notation of Proxemic Behavior*. *American Anthropologist* 65: 1003–1026, 1963.

¹⁹ In 2008 we were not allowed to put crime prevention bike stickers on bike stands in Westminster as the council construed them as “graffiti”, despite their purpose to help reduce cycle thefts.

²⁰ Gamman and Thorpe Gamman, L. and Thorpe, A. (April 2007) *Profit from Paranoia - Design Against 'Paranoid' Products*. EAD 07 *Dancing with Disorder: Design, Discourse, Disaster*. Izmir, Turkey. (11-13 April 2007).

²¹ Thorpe was speaking to Martin Perks at “Shaping Social Policy: Design Against Crime”, Battle of Ideas, 1 November, 2009, RCA, London. He replied to Perks accusations of bike stands “manipulating” the public... : “the definition of design as paternalism is ridiculous. Left to our own rather hapless devices, given human error, many of us would make the wrong choices about many things – from over-running the bath to forgetting to turn the gas out. Design has helped us live our lives better. This is not an arrogant outlook, but a fact. Ultimately design of the Bikeoff m-stand, which makes it easier for cyclists to lock both wheels and the frame of their bikes to the stand and harder to lock the op tube (a common insecure locking practice) - responded not totan opinion that cyclists would lock insecurely given the choice/chance - but the fact when observed they did. I would argue that there is no such thing as inert ‘choice architecture’ - all architecture and design promotes choices - some designs do so unwittingly - which in my opinion is worse. For example the ‘n’ stand promotes the ‘choice’ of insecure locking practice i.e. cross bar locking is most easily achieved. This was the finding of our 8000 user observations. So I would say our approach to design is not paternalistic, it is fraternalistic. Our designs are created via a participatory design process that involves many user observations and stakeholders voices, and aims ultimately to benefit that fraternity, as well as make a profit. Liberal paternalism’ is more familiar but is not what we do at DAC – it is not as good as ‘liberal fraternalism’ i.e. choice architecture defined by a fraternity of expert users - that aims to benefit that fraternity - and this is our practice is about.

²² A full detailed break down of factors that must be taken into consideration by banks is listed within this article- California Bankers Association (1996). *ATM Crime Survey Report*. Even though it is over ten years old, the majority of factors are still of risk within modern society and therefore still applicable.

²³ U.S. General Accounting Office (2002). *Identity Theft: Prevalence and Costs Appear to be Growing*. Report to Congressional Requesters. Washington, D.C.: U.S. General Accounting Office. Accessed on December 9, 2008 at <http://www.gao.gov/new.items/d02363.pdf>.